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5. [iAnywhere.com - Sybase SQL Anywhere Client Application Deployment Whitepaper](#)   
A technical overview of Sybase SQL Anywhere **client** application deployment. ... The following steps for deploying application are examined in this white paper and ... the same computer. A **run-time engine**A less-enabled version  
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7. [O-Matrix Run-Time Developer Version](#)   
... applications for use with the O-Matrix **Run-Time Engine** that can be distributed royalty-free ... COM-**based** solu COM **client** building tools enable ...  
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8. [InformationWeek > Software > Siebel Banks On Enterprise Application Integration > October 8](#)  
The vendor hopes its Universal Application Network platform, which offers a much larger market opportunity than growth engine. ... Network is a standards-**based** architecture developed by Siebel ... a **run-time engine** and tools also previewed new .Net-**based** Smart **Client** technology ...  
[www.informationweek.com/story/showArticle.jhtml?articleID=15201872](http://www.informationweek.com/story/showArticle.jhtml?articleID=15201872) - [More pages from this site](#)
9. [http://www.omatrix.com/manual/omrte\\_frame1.htm](http://www.omatrix.com/manual/omrte_frame1.htm)

... and Building Applications for the **Run-Time Engine**. Overview. The O-Matrix **Run-Time Engine** is ... COM-based other COM **client** building tools enable ...  
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11. [http://www.omatrix.com/manual/omatrixdeveloper\\_frame1.htm](http://www.omatrix.com/manual/omatrixdeveloper_frame1.htm) 

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12. **Siebel Systems - Press Releases - 2003 - Siebel Systems and Microsoft Optimize Siebel Business**

... **run-time engine** and tool-set for customization. The companies also previewed new .NET based Smart Client solutions throughout our **client**, server and ...  
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14. **The Technical Supervision Interface: A Java Based Synoptic View Environment (PDF)** 

THE TECHNICAL SUPERVISION INTERFACE: A JAVA BASED SYNOPTIC VIEW ENVIRONMENT P. Sollander, Ninin, C. ... a C++ prototype **client** exist at present. An interface between the SL-GMS **run-time engine** and the ...  
[www.elettra.trieste.it/CALEPCS99/proceedings/papers/mc1p34.pdf](http://www.elettra.trieste.it/CALEPCS99/proceedings/papers/mc1p34.pdf) - 136k - [View as html](#)

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... a server, the **run-time engine** displays the authentication ... **Client** SDK for IE 4.0 installed. InstallFromTheWeb Authenticode™ code signing tools based ...  
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[icstriplex.ca/products/ISaGRAF\\_Suite\\_Specification.pdf](http://icstriplex.ca/products/ISaGRAF_Suite_Specification.pdf) - 83k - [View as html](#)

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... techniques together, with browser-based **client** pull activating first, and WebLink **client** time-out occurring ... with Developer **run-time engine** is run ...  
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19. **History of SCGUI (XML-based GUI Browser)** 

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... MS Killed Java" (on the **Client**) JL Founder ... revisits the 'death' of Java on the **client**. " Five years ago, almost systems and love them ...

[slashdot.org/articles/02/08/30/1335233.shtml?tid=108](http://slashdot.org/articles/02/08/30/1335233.shtml?tid=108) - 493k - [Cached](#)

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[Pavlov: An Interface Builder for Designing Animated Interfaces - Wolber \(1997\) \(Correct\) \(1 citation\)](#)  
DEMO [21] and the underlying model and **run-time engine** of DEMO was redesigned to handle timed  
1. INTRODUCTION Interactive tools like those in **Visual Basic** and **Cs** significantly decrease the time and  
all coding, but to eliminate coding of the **visual**, interactive part of a graphical animated  
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[Towards an AI Behavior Toolkit for Games - Houlette, Fu, Ross \(2001\) \(Correct\)](#)  
and game developers. We describe the **run-time engine** and its interface, as well as a simple  
undocumented body of code. Reaching even further, **visual-oriented** editors make the AI behavior accessible  
that interfaces directly with the game, and a **visual** editor, called BUTTON, used to build behavior  
[www.aigames.org/2001/Houlette.pdf](http://www.aigames.org/2001/Houlette.pdf)

[A DAVIC-based Architecture for Hypermedia Applications over .. - Cesar Teixeira Iran \(Correct\)](#)  
are downloaded to the Client and the MHEG-5 **run-time engine** is responsible for decoding, interpreting,  
for data delivery. Keywords: DAVIC (Digital Audio-**Visual** Council) MHEG-5 (Multimedia and Hypermedia  
applications is being taken by the Digital Audio-**Visual** Council DAVIC [6] [7] [8] This is an  
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[DAVIC and Interoperability Experiments - Hair Kalva \(1997\) \(Correct\)](#)  
On Stus. Product Entity Mheg 5 Scene Mheg 5 **Runtime Engine** Media Dec Oding Demux Dsmcc Uu Input  
the development and deployment of broadband audio **visual** services, DAVIC has been working on specifying  
1. Introduction to DAVIC Digital Audio **Visual** Council (DAVIC) is a consortium of companies,  
<ftp.ctr.columbia.edu/CTR-Research/advent/public/papers/97/kalva97a.ps>

[A New Software Architecture for Evolvable Multimedia Software - Yasuhiko Yokote \(Correct\)](#)  
Non compliant portion of the application **Run-Time Engine** Figure 1: Traditional Layered Architecture  
presented at the 11th meeting of the Digital Audio-**Visual** Council (DAVIC) held in Berlin in December 1995.  
<ftp.itojun.org/pub/paper/yokote-ecmast96.ps.gz>

[Experiments with MHEG Player/Studio: An Interactive.. - Oh, Yi, Jeong, Choi \(Correct\)](#)  
and the complex interaction between MHEG-5 RTE(**run-time engine**) and Java VM(Virtual Machine) Due to the  
MHEG Player/Studio :An Interactive Hypermedia **Visualization** and Authoring System Seungtaek Oh, Yung  
environment. We developed a prototype system for **visualizing** and authoring hypermedia information based  
[mmlab.snu.ac.kr/~ducky/paper/em98/em98.ps](http://mmlab.snu.ac.kr/~ducky/paper/em98/em98.ps)

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... stated goal of bringing open-source **programming** languages to a ... a near-functional equivalent to **Visual Basic** .NET ... that can target the .NET **runtime engine** can be ...  
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### Most Wanted 2004 - Microsoft **Visual** Basic .NET Standard 2003

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### C# FAQ 1.1 - What is Microsoft .NET?

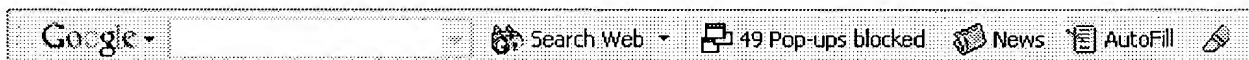
... can be developed by using a variety of **programming** languages. ... CLR as well as command

line compilers for C#, **Visual Basic .NET** and the **runtime engine** for ASP ...  
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1 [Augmented reality and mobile systems II: Meeting the spirit of history](#)

Ursula Kretschmer, Volker Coors, Ulrike Spierling, Dieter Grasbon, Kerstin Schneider, Isabel Rojas, Rainer Malaka

November 2001 **Proceedings of the 2001 conference on Virtual reality, archeology, and cultural heritage**

Full text available: pdf(18.82 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a research and development project for a novel technology, making the conveyance of cultural heritage during a historic sightseeing tour a unique experience. The cornerstones of this system are mobile augmented reality, including a hybrid tracking approach, intelligent queries to pose complex questions about geographical and historical knowledge, as well as a story engine to interactively run a digital story. This system involves the user in a thrilling story while exploring ...

**Keywords:** intelligent geo-temporal databases, interactive digital storytelling, mobile augmented reality

2 [Session C: Scaleable interfaces: A visualization design repository for mobile devices](#)

Volker Paelke, Christian Reimann, Waldemar Rosenbach

February 2003 **Proceedings of the 2nd international conference on Computer graphics, virtual Reality, visualisation and interaction in Africa**

Full text available: pdf(408.27 KB)

Additional Information: [full citation](#), [abstract](#), [references](#)


Mobile devices with multimedia and graphics capabilities have great potential in a wide variety of applications. In addition to location-based services, mobile-commerce and multimedia entertainment that are often viewed as promising applications of third generation mobile networks mobile devices also offer a potential solution to bridging the digital divide in developing countries. Mobile devices could be used to provide essential IT services like internet access, communication, information, edu ...

**Keywords:** design reuse, interface design for mobile devices, visualization design

3 [Multi-sensor context-awareness in mobile devices and smart artifacts](#)

Hans W. Gellersen, Albercht Schmidt, Michael Beigl

October 2002 **Mobile Networks and Applications**, Volume 7 Issue 5

Full text available:  [pdf\(240.60 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The use of context in mobile devices is receiving increasing attention in mobile and ubiquitous computing research. In this article we consider how to augment mobile devices with awareness of their environment and situation as context. Most work to date has been based on integration of generic context sensors, in particular for location and visual context. We propose a different approach based on integration of multiple diverse sensors for awareness of situational context that can not be inferred ...

**Keywords:** context-awareness, mobile computing, sensor integration, ubiquitous computing

4 Managing images: Automatic browsing of large pictures on mobile devices

Hao Liu, Xing Xie, Wei-Ying Ma, Hong-Jiang Zhang

November 2003 **Proceedings of the eleventh ACM international conference on Multimedia**

Full text available:  [pdf\(708.49 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Pictures have become increasingly common and popular in mobile communications. However, due to the limitation of mobile devices, there is a need to develop new technologies to facilitate the browsing of large pictures on the small screen. In this paper, we propose a novel approach which is able to automate the scrolling and navigation of a large picture with a minimal amount of user interaction on mobile devices. An image attention model is employed to illustrate the information structure within ...

**Keywords:** adaptive content delivery, attention model, browsing path, form factor, image adaptation, information foraging

5 Late breaking posters: Testing visual notification cues on a mobile device

Peter Tarasewich, Tashfeen Bhimdi, Myra Dideles

April 2004 **Extended abstracts of the 2004 conference on Human factors and computing systems**

Full text available:  [pdf\(59.98 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


This paper discusses field-testing of visual notification cues on a mobile handheld device. Each cue consisted of three multicolored lights preceded by a tactile signal (vibration). After being customized, the cues were sent periodically to the device over a wireless network as users went about their normal activities. User personalization seemed to enhance learning and usefulness of the cues, while the additional tactile signal aided arrival awareness.

**Keywords:** handheld and mobile devices, ubiquitous computing, user studies, visual notification cues

6 Speech, Audio, Gesture: Gestural and audio metaphors as a means of control for mobile devices

Antti Pirhonen, Stephen Brewster, Christopher Holguin

April 2002 **Proceedings of the SIGCHI conference on Human factors in computing systems: Changing our world, changing ourselves**

Full text available:  [pdf\(464.75 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper discusses the use of gesture and non-speech audio as ways to improve the user interface of a mobile music player. Their key advantages mean that users could use a player without having to look at its controls when on the move. Two very different evaluations of

the player took place: one based on a standard usability experiment (comparing the new player to a standard design) and the other a video analysis of the player in use. Both of these showed significant usability improvements for ...

**Keywords:** evaluation, gestures, metaphor, mobile computing, non-speech audio

7 CyberCode: designing augmented reality environments with visual tags

Jun Rekimoto, Yuji Ayatsuka

April 2000 **Proceedings of DARE 2000 on Designing augmented reality environments**

Full text available:  [pdf\(2.92 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The CyberCode is a visual tagging system based on a 2D-barcode technology and provides several features not provided by other tagging systems. CyberCode tags can be recognized by the low-cost CMOS or CCD cameras found in more and more mobile devices, and it can also be used to determine the 3D position of the tagged object as well as its ID number. This paper describes examples of augmented reality applications based on CyberCode, and discusses some key characteristics of tagging technologies ...

**Keywords:** CyberCode, ID-aware interface, augmented reality, merging virtual and real

8 Late breaking result papers: Designing visual notification cues for mobile devices

Christopher S. Campbell, Peter Tarasewich

April 2004 **Extended abstracts of the 2004 conference on Human factors and computing systems**

Full text available:  [pdf\(206.23 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Mobile and wearable devices place enormous constraints on input and display form factors as well as on user attention. The key to designing micro-displays is knowing what sizes and configurations are viable for keeping users informed, what flexibility different micro-displays provide for different types of messages, and the learning requirements on the user. An experiment was performed to measure user learning and comprehension of increasing amounts of information on a simulated three-light visu ...

**Keywords:** comprehension, handheld devices and mobile computing, learning, notification cues, ubiquitous computing, user interface design, visual displays

9 Optimizing encoding: Using link analysis to improve layout on mobile devices

Xinyi Yin, Wee Sun Lee

May 2004 **Proceedings of the 13th conference on World Wide Web**

Full text available:  [pdf\(377.81 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Delivering web pages to mobile phones or personal digital assistants has become possible with the latest wireless technology. However, mobile devices have very small screen sizes and memory capacities. Converting web pages for delivery to a mobile device is an exciting new problem. In this paper, we propose to use a ranking algorithm similar to Google's PageRank algorithm to rank the content objects within a web page. This allows the extraction of only important parts of web pages for delivery t ...


**Keywords:** html, link analysis, pda (personal digital assistant), www (world wide web)

10

Overcoming the Lack of Screen Space on Mobile Computers

Stephen Brewster

January 2002 **Personal and Ubiquitous Computing**, Volume 6 Issue 3

Full text available:  pdf(489.31 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

One difficulty for interface design on mobile computers is lack of screen space caused by their small size. This paper describes a small pilot study and two formal experiments that investigate the usability of sonically-enhanced buttons of different sizes. The underlying hypothesis being that presenting information about the buttons in sound would increase their usability and allow their size to be reduced. An experimental interface was created that ran on a 3Com Palm III mobile computer and use ...

11 A paradigm shift: alternative interaction techniques for use with mobile & wearable devices 

Joanna Lumsden, Stephen Brewster

October 2003 **Proceedings of the 2003 conference of the Centre for Advanced Studies conference on Collaborative research**

Full text available:  pdf(251.70 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Desktop user interface design originates from the fact that users are stationary and can devote all of their visual resource to the application with which they are interacting. In contrast, users of mobile and wearable devices are typically in motion whilst using their device which means that they cannot devote all or any of their visual resource to interaction with the mobile application -- it must remain with the primary task, often for safety reasons. Additionally, such devices have limited s ...

12 Adapting content to mobile devices: Detecting web page structure for adaptive viewing on small form factor devices 

Yu Chen, Wei-Ying Ma, Hong-Jiang Zhang

May 2003 **Proceedings of the twelfth international conference on World Wide Web**

Full text available:  pdf(3.64 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Mobile devices have already been widely used to access the Web. However, because most available web pages are designed for desktop PC in mind, it is inconvenient to browse these large web pages on a mobile device with a small screen. In this paper, we propose a new browsing convention to facilitate navigation and reading on a small-form-factor device. A web page is organized into a two level hierarchy with a thumbnail representation at the top level for providing a global view and index to a set ...

**Keywords:** adaptive hypermedia, content adaptation, mobile browser

13 Session 6: student best paper contest: A utility framework for the automatic generation of audio-visual skims 

Hari Sundaram, Lexing Xie, Shih-Fu Chang

December 2002 **Proceedings of the tenth ACM international conference on Multimedia**

Full text available:  pdf(487.92 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In this paper, we present a novel algorithm for generating audio-visual skims from computable scenes. Skims are useful for browsing digital libraries, and for on-demand summaries in set-top boxes. A computable scene is a chunk of data that exhibits consistencies with respect to chromaticity, lighting and sound. There are three key aspects to our approach: (a) visual complexity and grammar, (b) robust audio segmentation and (c) an utility model for skim generation. We define a measure of visual c ...

14 "Making place" to make IT work: empirical explorations of HCI for mobile CSCW 

Steinar Kristoffersen, Fredrik Ljungberg

November 1999 **Proceedings of the international ACM SIGGROUP conference on Supporting group work**

Full text available:  pdf(1.67 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper addresses issues of user interface design, relating to ease of use, of handheld CSCW. In particular, we are concerned with the requirements that arise from situations in which a traditionally designed mobile computer with a small keyboard and screen, may not be easily used. This applies to many mobile use contexts, such as inspection work and engineering in the field. By examining two such settings, we assert that what is usually pointed to as severe shortcomings of mobile comput ...

**Keywords:** audio, direct manipulation, handheld CSCW, tactile input, user interface design, video

15 Customizing Graphics for Tiny Displays of Mobile Devices

Thomas Rist, Patrick Brandmeier

January 2002 **Personal and Ubiquitous Computing**, Volume 6 Issue 4

Full text available:  pdf(309.97 KB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

Advances in mobile devices and wireless telecommunication infrastructure already provide mobile users with access to online information sources and services. Compared to the PC world, however, mobile access is still quite restricted, especially with regard to the display of graphical representations, such as images, drawings, diagrams, maps and logos. Since graphical representations are increasingly used in the World Wide Web for the purpose of information presentation, the adaptation of graphic ...

**Keywords:** Adaptive graphics, Image transformation, Mobile services, Mobile web access

16 Full Technical Papers: Presenting route instructions on mobile devices

Christian Kray, Christian Elting, Katri Laakso, Volker Coors

January 2003 **Proceedings of the 8th international conference on Intelligent user interfaces**

Full text available:  pdf(434.46 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we evaluate several means of presenting route instructions to a mobile user. Starting from an abstract language-independent description of a route segment, we show how to generate various presentations for a mobile device ranging from spoken instructions to 3D visualizations. We then examine the relationship between the quality of positional information, available resources and the different types of presentations. The paper concludes with guidelines that help to determine which p ...

**Keywords:** mobile devices, multimodal presentations, positional information, route instructions

17 Designing mobile technologies to support co-present collaboration

Helen Cole, Danaë Stanton

December 2003 **Personal and Ubiquitous Computing**, Volume 7 Issue 6

Full text available:  pdf(251.03 KB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

Mobile technologies offer new opportunities for children's educational activities in that they can be used across different locations and times. Naturally, some instances of mobile technology use will necessitate, or be enhanced by, the sharing of information. Social

interaction is important for sharing ideas, constructing and shaping understanding and fundamental for educational development. However the physical size of mobile technologies presents interesting challenges when designing for ...

**Keywords:** Interaction, Learning, Mixed reality, Mobile devices, Usability

18 Interaction in the real world: Ambient touch: designing tactile interfaces for handheld devices

Ivan Poupyrev, Shigeaki Maruyama, Jun Rekimoto

October 2002 **Proceedings of the 15th annual ACM symposium on User interface software and technology**

Full text available:  pdf(3.71 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper investigates the sense of touch as a channel for communicating with miniature handheld devices. We embedded a PDA with a TouchEngine™ --- a thin, miniature lower-power tactile actuator that we have designed specifically to use in mobile interfaces (Figure 1). Unlike previous tactile actuators, the TouchEngine is a universal tactile display that can produce a wide variety of tactile feelings from simple clicks to complex vibrotactile patterns. Using the TouchEngine, we began ...

**Keywords:** mobile devices and interfaces, tactile feedback

19 Interaction techniques for constrained Displays: Multimodal 'eyes-free' interaction techniques for wearable devices

Stephen Brewster, Joanna Lumsden, Marek Bell, Malcolm Hall, Stuart Tasker

April 2003 **Proceedings of the conference on Human factors in computing systems**

Full text available:  pdf(472.78 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Mobile and wearable computers present input/output problems due to limited screen space and interaction techniques. When mobile, users typically focus their visual attention on navigating their environment - making visually demanding interface designs hard to operate. This paper presents two multimodal interaction techniques designed to overcome these problems and allow truly mobile, 'eyes-free' device use. The first is a 3D audio radial pie menu that uses head gestures for selecting items. An ...

**Keywords:** gestural interaction, wearable computing

20 Gummi: a bendable computer

Carsten Schwesig, Ivan Poupyrev, Eijiro Mori

April 2004 **Proceedings of the 2004 conference on Human factors in computing systems**

Full text available:  pdf(4.40 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Gummi is an interaction technique and device concept based on physical deformation of a handheld device. The device consists of several layers of flexible electronic components, including sensors measuring deformation of the device. Users interact with this device by a combination of bending and 2D position control. Gummi explores physical interaction techniques and screen interfaces for such a device. Its graphical user interface facilitates a wide range of interaction tasks, focused on browsing ...

**Keywords:** GUI, embodied interaction, flexible electronics, handheld devices, interaction design, mobile computing, smartcards